

# PATENT COOPERATION TREATY

SEP 21 2011

**PCT**

From the INTERNATIONAL SEARCHING AUTHORITY

To:

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Minneapolis, Minnesota 55402-3319  
ETATS-UNIS D'AMERIQUE

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT AND  
THE WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference C382.13-0213/JKC	Date of mailing (day/month/year)  16 September 2011 (16-09-2011)
International application No. PCT/US2011/038279	International filing date (day/month/year)  27 May 2011 (27-05-2011)
Applicant  MIDTRONICS, INC.	

DOCKETED  
RESPONSE DUE  
DATE 3/18/12

Art. 19  
12-18-11  
12-18-11

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70

For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 - 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ With regard to any protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

**4. Reminders**

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before completion of the technical preparations for international publication (Rules 90bis.1 and 90bis.3).

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

For details about the applicable time limits, Office by Office, see [www.wipo.int/pct/en/texts/time\\_limits.html](http://www.wipo.int/pct/en/texts/time_limits.html) and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel.: (+31-70) 340-2040	Authorized officer  GIEL-BARRAGAN RAMOS, Cecilia Tel.: +31 (0)70 340-3046
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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>C382.13-0213/JKC</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. <b>PCT/US2011/038279</b>	International filing date (day/month/year) <b>27/05/2011</b>	(Earliest) Priority Date (day/month/year) <b>18/06/2010</b>
Applicant <b>MIDTRONICS, INC.</b>		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed  
☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

- b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).
- c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box No. II)

3. ☐ Unity of invention is lacking (see Box No. III)

## 4. With regard to the title,

☒ the text is approved as submitted by the applicant  
☐ the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,

☒ the text is approved as submitted by the applicant  
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

## 6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1
- ☒ as suggested by the applicant  
☐ as selected by this Authority, because the applicant failed to suggest a figure  
☐ as selected by this Authority, because this figure better characterizes the invention
- b. ☐ none of the figures is to be published with the abstract

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2011/038279

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. H01M10/42 H01M10/48  
 ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 324 042 B1 (ANDREWS CRAIG C [US]) 27 November 2001 (2001-11-27) column 1, lines 6-10 column 5, line 23 - column 9, line 21	1-18
Y	WO 96/28846 A1 (BARR & STROUD LTD [GB]; MCQUADE THOMAS [GB]) 19 September 1996 (1996-09-19) page 1, lines 1-37 figure 1	1-18
A	US 2005/218902 A1 (RESTAINO HARVEY A [US] ET AL) 6 October 2005 (2005-10-06) page 3, paragraph 0006 page 3, paragraph 0025 - page 5, paragraph 0036	1-18

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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance  
 "E" earlier document but published on or after the international filing date  
 "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
 "O" document referring to an oral disclosure, use, exhibition or other means  
 "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"S" document member of the same patent family

Date of the actual completion of the international search

9 September 2011

Date of mailing of the international search report

16/09/2011

Name and mailing address of the ISA/  
 European Patent Office, P.B. 5818 Patentkan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040,  
 Fax: (+31-70) 340-3016

Authorized officer

Kelly, Michael

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2011/038279

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/007068 A1 (JOHNSON TODD W [US] ET AL) 13 January 2005 (2005-01-13) page 10, paragraph 0138-0141 -----	1-18

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/038279

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6324042	B1	27-11-2001	US 2002071232 A1	13-06-2002
WO 9628846	A1	19-09-1996	NONE	
US 2005218902	A1	06-10-2005	NONE	
US 2005007068	A1	13-01-2005	US 2006108984 A1	25-05-2006
			US 2006103357 A1	18-05-2006
			US 2009197152 A1	06-08-2009
			US 2007103121 A1	10-05-2007

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

## PCT

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2011/038279

International filing date (day/month/year)  
27.05.2011

Priority date (day/month/year)  
18.06.2010

International Patent Classification (IPC) or both national classification and IPC  
INV. H01M10/42 H01M10/48

Applicant  
MIDTRONICS, INC.

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



European Patent Office  
P.B. 3616 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 2940

Date of completion of  
this opinion

see form  
PCT/ISA/210

Authorized Officer

Kelly, Michael

Telephone No. +31 70 340 8973



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2011/038279

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of:
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
  - a. (means)
    - ☐ on paper
    - ☐ in electronic form
  - b. (time)
    - ☐ in the international application as filed
    - ☐ together with the international application in electronic form
    - ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	<u>1-18</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-18</u>
Industrial applicability (IA)	Yes: Claims	<u>1-18</u>
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2011/038279

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**Box No. VIII    Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet



**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

- D1 US 6 324 042 B1 (ANDREWS CRAIG C [US]) 27 November 2001 (2001-11-27)
- D2 WO 96/28846 A1 (BARR & STROUD LTD [GB]; MCQUADE THOMAS [GB]) 19 September 1996 (1996-09-19)
- D3 US 2005/218902 A1 (RESTAINO HARVEY A [US] ET AL) 6 October 2005 (2005-10-06)
- D4 US 2005/007068 A1 (JOHNSON TODD W [US] ET AL) 13 January 2005 (2005-01-13)

**Novelty**

A battery maintenance device configured to maintain a storage battery, comprising: an electrical connection configured to couple to a storage battery; maintenance circuitry configured to couple to the battery through the electrical connection and perform maintenance on the battery, the maintenance circuitry including an electrical load configured to draw an electrical current from the storage battery, the electrical current causing the electrical load to heat; and a phase change material thermally coupled to the load, the phase change having a specific heat index which has a non-linear relationship to temperature to thereby reduce a rate of change in temperature of the electrical load is not disclosed in the cited prior art.

The subject-matter of claims 1 and 10 is therefore new (Article 33(2) PCT).

**Inventive step**

The present application does not meet the criteria of Article 33(3) PCT, because the subject-matter of claim 1 does not involve an inventive step.

D1 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses a battery maintenance device configured to maintain a storage battery, comprising: an electrical connection configured to couple to a storage battery; maintenance circuitry configured to couple to the battery through the electrical connection and perform maintenance on the battery, the maintenance circuitry

including an electrical load configured to draw an electrical current from the storage battery, the electrical current causing the electrical load to heat; and a heat sink thermally coupled to the load to reduce a rate of change in temperature of the electrical load (D1: column 1, lines 6-10, column 5, line 23 to column 9, line 21).

The subject-matter of claim 1 therefore differs from this known device in that a phase change material is thermally coupled to the load, the phase change having a specific heat index which has a non-linear relationship to temperature to thereby reduce a rate of change in temperature of the electrical load.

The problem to be solved by the present invention may therefore be regarded as providing an improved means to reduce a rate of change in temperature of the electrical load.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons: D2 discloses an electrical device that includes a heat sink to dissipate the heat generated by the device. The heat sink is thermally coupled to the electrical load, the phase change having a specific heat index which has a non-linear relationship to temperature to thereby reduce a rate of change in temperature of the electrical load (see D2: page 1, lines 1-37).

The skilled person would consider it obvious to combine the teachings of D1 and D2 arriving at the subject matter of claim 1. The subject matter of claim 1 is therefore not inventive.

The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent method claim 10, which therefore is also considered not inventive.

Dependent claims 2-9 and 11-18 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, see D1-D4 and the passages cited in the search report, where the features of the dependent claims are disclosed and rendered not inventive.

### **Industrial applicability**

The subject matter described in claims 1-19 can find use in industry and is therefore industrially applicable (Article 33 (1) and (4) PCT).

**Re Item VIII**

**Certain observations on the international application**

The vague and imprecise statement in the description on page 11, paragraph 0027, implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them.

Expressions such as "hereby incorporated by reference" should be deleted in the interests of clarity (Article 6 PCT).

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

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General information

For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.

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Amending claims under Art. 19 PCT

Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.

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Filing a demand for international preliminary examination

In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/ WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT).

If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).

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Filing informal comments

After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.

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End of the international phase

At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPR (international preliminary examination report).

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Relevant PCT Rules and more information

Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003